CHAPTER 34

Transfer of Environmentally Sound Technology, Cooperation And Capacity-Building

-- Theodora Carroll-Foster --

THE NATURE OF THE PROBLEM

In order to develop sustainably, all countries need access to training in the use of environmentally sound technologies (EST). Moreover, new and efficient technologies will be essential to increase the capabilities, particularly of lesser developed countries, to achieve sustainable development, sustain their own and the world's economies, protect the environment and alleviate poverty and human suffering.

The availability of scientific and technological information and access to and transfer of environmentally sound technology are essential requirements for sustainable development. Similarly, the primary goal of improved access to technology information is to enable informed choices, leading to access to and transfer of such technologies and the strengthening of countries' own technological capabilities.

There is a need for favourable access to and transfer of environmentally sound technologies, particularly to lesser developed countries, which will involve the transfer of necessary technological know-how, as well as the expansion of economic, technical and managerial skills in order to use and further develop such technologies. Joint efforts by enterprises and governments, and suppliers of technology and its recipients, are required to ensure the best possible results from the transfer of (and sharing of) technology.

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PROGRAM AREAS AND OBJECTIVES

Along with finances and institutions, technology transfer is one of the three key cross-cutting issues addressed in Agenda 21. The activities proposed in this chapter of Agenda 21 aim at improving conditions for and processes on information, access to and transfer of technology, as well as on capacity-building and cooperative arrangements and partnerships in the field of technology. Five broad objectives are identified in the chapter:

(1) to improve access to scientific and technological information;

(2) to promote, facilitate and finance access to and transfer of technologies;

(3) to facilitate the maintenance and promotion of indigenous technologies;

(4) to strengthen endogenous capacity to assess, adopt, manage and apply technologies. This could be achieved through, *inter alia*: human resource development; strengthening research and the development of institutional capacities and program implementation; and integrating sector assessments of technology needs with countries' plans, objectives and priorities as foreseen in the national implementation of Agenda 21.

(5) to promote long-term technological partnerships between holders and users of technologies; and,

CANADIAN POSITIONS AT RIO

1. Official Canadian Position

Canada has had problems with the concepts of preferential and concessionary terms for technology transfer. The government has generally been more in favour of preferential terms in the context of such technology (e.g., low interest loans through Canadian Official Development Assistance). As a major importer of environmentally appropriate technology, Canada would be put at an economic disadvantage *vis-a-vis* newly industrialized countries if they were granted preferential access to technology from other developed countries. Canada has wanted language on preferential terms to be consistent with international trade rules, including intellectual property rights. The following were Canada's three principle objectives with regard to the transfer of technology:

(1) to emphasize education, training and capacity-building in developing countries in order to optimize the effectiveness of technology transfers;

(2) to ensure that any proposals, programs, etc. on the transfer of technology reflect the fundamentally commercial nature of transferring technology; and,

(3) To avoid protracted discussions on terms of access to technology, referring, if necessary, to the need to provide concessional financing rather than concessional transfer of technology.

2. Non-Governmental Organizations

Canadian NGOs have called on Canada to support lesser developed countries proposals for a more preferential and concessionary transfer of environmentally appropriate technology to the South. Canadian NGOs have stated that:

- current development models of economic growth are environmentally destructive;
- transfers of technology must include community-based management;
- technology transfer must be environmentally sound and culturally appropriate, and transferred on favourable terms to developing countries;
- preferential terms of transfer and trade are required;
- questions of intellectual property rights, ease of access and the base of knowledge or prime components of the product or process coming from developing countries without compensation or ownership must be addressed;
- efforts should be undertaken to promote and protect traditional knowledge of Indigenous groups and local populations regarding all aspects of sustainable development;
- the impacts of Northern technology on the global ecosystem must be dealt with;
- the social and environmental impacts and dislocations caused by the transfer of technology from North to South must be addressed; and,
- "environmentally sound" must be more precisely defined and based upon scientific knowledge.

Canadian NGOs were, in particular, disappointed with the Canadian Government's position regarding concessional terms of transfer and trade. They had hoped that Canada would align itself with some of the other industrialized countries that acknowledged the need to provide favourable rates of technology transfer in order to effectively move towards equitable global sustainable development. Instead, Canada, as a major importer of high technology, aligned itself with other nations which were concerned with being placed in a disadvantageous position *vis-a-vis* international competitiveness should concessional transfers of technology be agreed upon.

3. Business and Industry

Business was concerned that there was a general public misunderstanding of how technology is developed and disseminated. Besides being a piece of information, technology is, in fact, a fundamental business commodity; a broad concept, encompassing successful adaptation of systems and know-how; and is dependent upon the skills and training of users.

With regards to patent protection, business and industry generally think that the international patent system is not a "constraint to the availability of environmentally sound technology". Rather, strong patent protection is necessary in order to encourage the research that will lead to the development of more environmentally sound technologies in the future. What is more often missing in developing countries is the lack of a supportive infrastructure, including educational and technical skills, machinery and equipment, a recognition of the need for maintenance training and support, etc.

Concern was expressed as to whether a need for clearing houses on environmental technology, as proposed in the Chapter, had been demonstrated.

4. Indigenous

Indigenous Peoples called for Indigenous Peoples' development policies based on their values. In many cases Indigenous Peoples are synthesizing Indigenous and western science in new ways of understanding. However, Indigenous development should be oriented from the Indigenous perspective and western NGOs should endeavour not to impose their views and values on Indigenous Peoples, but rather encourage technology transfer which is relevant to the needs of the Indigenous world as opposed to those of the consumption oriented western world. Technology transfer must also be investigated from the reverse, that is the role Indigenous knowledge can play in guiding the western world on better sustainable technologies such as for agriculture, medicine, etc. Both governments and NGOs should involve themselves in a new partnership with Indigenous Peoples based on principles such as those incorporated in the Indigenous Treaty.

COMMITMENTS MADE BY CANADIANS

1. Legally-Binding Documents

None.

2. Political Pronouncements

None.

3. Alternative NGO Treaties and Kari-Oca

NGO Treaties

At the same time as UNCED, two major international events were also held at Rio: the International Non-Governmental Organization Forum (Global Forum), and the Kari-Oca Conference. At the Global Forum, 3,100 NGOs discussed a number of matters related to environment and development and produced a parallel set of documents: and NGO

Earth Charter and 39 Alternative NGO Treaties. Canadian NGOs played a significant role in developing the treaties and took a lead in coordinating their dissemination.

NGO Treaty on Technology Bank -- Solidarity System for Technological Exchange

The proposed Technology Bank was conceived by NGOs as a way for sharing the wealth of technological, social and cultural experience. Technology could be deposited in the bank to be shared with other groups. This information would give developing countries an advantage in their fight against poverty. Much present, modern technology harms the environment and traditional ways of life; it does not incorporate the creativity of Third World populations. Critieria for the Technology Bank stipulates that it must be: pragmatic; easily adaptable; culturally compatible; small-scale; low cost; self-reliant; energy efficient; sustainable by local resources; and produce only non-toxic bio-degradable waste.

NGOs believe that such a system would not only stimulate the exchange of information and data, but would include the experience and practical advice of different communities. The system would include a variety of communication methods from personal contact to electronic exchange. It would respect cultural differences by ensuring a genuine transfer and would not be limited only to "scientific" concepts. A code of ethics would be developed for and among users.

Kari-Oca

The second alternative forum at Rio was the International Conference on Territory, Environment and Development (the Kari-Oca Conference). The Kari-Oca Conference was held immediately prior to UNCED by and for the world's Indigenous Peoples. More than 650 Indigenous representatives participated in meetings and cultural events during the conference, where they also developed a 109-point Indigenous Peoples' Earth Charter.

COMPARISON BETWEEN CURRENT CANADIAN GOVERNMENT POLICY AND COMMITMENTS MADE

Canada has largely taken the position of developing and seeking to transfer high technology before determining what sustainability could mean. Canada has made inadequate efforts to promote, fund or legislate the use of known environmentally appropriate technologies at home or abroad. Universities and research institutions generally follow the Government's lead and money. Accordingly, support for organizations or small businesses developing appropriate technologies for use in Canada or shared with developing countries has been somewhat minimal. Consideration for Indigenous technologies here or abroad has also been rather muted.

The International Development Research Institute (IDRC) has supported research and technology development in several key areas of "green" or "clean" technology (e.g., water quality management, remote sensing, biological agricultural inputs, and industrial waste management). Research in these areas will continue with emphasis on the development of the human and institutional capabilities needed to diffuse IDRC-supported technologies beyond initial pilot projects. Efforts will also be made to promote technological links between Canadians and their partners in developing countries.

In addition, much of the work within this theme will focus on alternative institutional and policy frameworks for the transfer, adoption, and development of environmentally sound technologies. This will include the evaluation and design of alternative policy instruments and institutions, as well as more concrete actions to build capacity at the enterprise and policy-making levels.

The following outputs are expected:

- consolidation of IDRC's role in environment and technology, and as a focal point for discussion and debate among other agencies;
- promotion of dialogue between stakeholders on some of the technology and innovation related issues that were not resolved at UNCED (e.g., access to technology and intellectual property rights, also gender and science/technology);
- development and implementation of long-term plans for the diffusion and application of specific environmentally sound technologies, both those developed with IDRC assistance (e.g., fog-catchers and water quality assessment) and those where IDRC has particular in-house expertise (e.g., remote sensing);
- development and pilot testing of specific environmentally sound technologies in fields of current IDRC priority (e.g., development of natural resource-based products, and agricultural biotechnology) and promotion of enterprises to manufacture and market these technologies, where appropriate;
- implementation of a number of national and/or regional information systems to provide information on alternative sources and channels of technology supply;
- a number of training and institutional development activities to strengthen the technology management and innovation capabilities of small and medium-size enterprises (SME) and intermediary support institutions; and,
- A series of research projects to evaluate the impact of alternative policy and institutional frameworks on technological innovation in general, and on the supply, adoption, and adaptation of specific environmentally sound technologies.

DEFICIENCIES, GAPS AND CONSTRAINTS WITHIN THIS CHAPTER 34

No issue is really absent from Chapter 34, but several areas received insufficient attention.

- There is very little concrete discussion of Indigenous technology in the chapter, despite a general statement regarding its importance.

- Little attention is given to the effects of environmentally sound technology on employment, poverty, income distribution, gender concerns, etc. -- with particular focus on the environmental side of the equation (although not just remediation technology).

- Overall, the chapter is too sanguine about how easy it is to identify environmentally sound technologies. Too little attention is paid to the complexities of technology/needs assessment, which is presented as almost entirely a technical matter.

- The implementation of maintenance servicing of and training for technology sustainability, and technology marketing and dissemination were given somewhat short shift.

Overall, the substantive content of the document had greatly improved compared with the earlier drafts of 18 months ago. In particular, it stressed that facilitating North-South technology flow is not sufficient, but must be matched by efforts to build domestic capabilities. Earlier documents had concentrated almost exclusively on the legal/financial barriers to transfer (particularly patents), rather than on links between technology transfer and domestic technology capabilities.

Chapter 34 also moved away from a "technology supermarket" view, by stressing that effective transfer demands on-going effort by recipients as well as long-term partnerships between recipients and suppliers.

Chapter 34 correctly stresses capacity-building as a complement to technology transfer despite difficulties in terms of programming. But, in actuality, the chapter is more specific about information systems and technology transfer than capacity-building. The chapter's breadth of coverage results in few references to specific types of technology which could act as an initial focus for international efforts.

The broad scope and cross-cutting nature of this chapter, causes overlap with other chapters (e.g., Chapter 37 - National Mechanisms and International Cooperation for Capacity Building, and Chapter 33, Financial Assistance).

COMPARISON BETWEEN CURRENT CANADIAN GOVERNMENT POLICY AND COMMITMENTS MADE

As Canada is a leader in many forms of EST development, matters associated with technology transfer are of considerable relevance. The protection of intellectual property rights associated with development of new technologies, for example, is a concern for Canadian companies with an interest in pursuing export opportunities in ESTs. If, as Agenda 21 envisages, the market is to be the main vehicle to introduce new technologies to developing countries, then the private sector will have to be reassured that its proprietary interests in EST research and development will be duly protected. In view of Canada's interest in encouraging trade across all sectors,

External Affairs International Trade Canada (EAITC) is placing increasing emphasis on how the field of intellectual property rights is evolving and interfacing with EST trade potential.

A distinction has been drawn between "in production" or process-oriented ESTs that represent new and innovative technical developments with relatively little operating history and the "post-production" ESTs (i.e., end-of-pipe and waste management technologies) that are adaptations of well understood technologies. There is a much greater tendency for the process-oriented technologies to be developed by a single user and not for the purpose of marketing them. Maintaining proprietary control over such technologies may offer competitive advantage and, therefore, access to this technology for others may raise problems. In-production ESTs may also involve innovations in the development of new industrial materials for which there will be a strong proprietary interest. The Canadian government is well aware of the distinction between the two ESTs and the need for properly designed policies for each, so as both to facilitate and promote EST transfer, while respecting proprietary interests.

CANADIAN ACTIVITIES EVOLVING THROUGH THE SUSTAINABILITY PROCESS

Alberta - Department of Agriculture

University of Victoria, University of British Columbia, University of Waterloo and other academic/research institutions in Canada.

OTHER RELEVANT INTERNATIONAL SUSTAINABILITY-RELATED FORA

- United Nations Commission on Sustainable Development
- Earth Council
- United Nations Centre on Science and Technology for Development (UNCSTD)
- Society for International Development, Task Force on Environment and Technology

SUGGESTED READINGS AND INFORMATION SOURCES

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Business Publishers, "World Environmental Directory", (New York: 1991).

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United Nations Centre on Transnational Corporations. Options to Facilitate Transfer of Environmentally Sound Technologies to Developing Countries on Favourable Terms, July 1991.

United Nations Non-Governmental Liaison Service. Technology Transfer and Financial Resources, E&D File No. 12, February 1991.

World Commission on Environment and Development. Our Common Future, (Oxford: Oxford University Press, 1987).

Information Sources:

Industry Canada, 235 Queen Street, Ottawa, Ontario, K1A 0H5, tel (613) 954-2754, fax (613) 995-2633.

International Development Research Institute, 250 Albert Street, Ottawa, Ontario, K1G 3H9, tel (613) 236-6163, fax (613) 238-7230.

International Institute for Sustainable Development, 161 Portage Avenue, Winnipeg, Manitoba, R3B 0Y4, tel (204) 958-7716, fax (204) 958-7710.

NGO Forum for Sustainability, 63 Sparks Street, Room 603, Ottawa, Ontario, K1P 5A6, tel (613) 238-3811, fax (613) 594-2948.

National Round Table on the Environment and the Economy, Suite 1500, 1 Nicholas Street, Ottawa, Ontario, K1N 7B7, tel (613) 992-7189, fax (613) 992-7385.

United Nations Commission for Sustainable Development, Department of Policy Coordination and Sustainable Development, Room S-3060, United Nations, New York, N.Y., 10017, tel (212) 963-5959.

Planning for a Sustainable Future

PROJET DE SOCIÉTÉ

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DOCUMENT AND INFORMATION COMMITTEE

ÉVALUATION DE L'ACTION 21
COMITÉ DE LA DOCUMENTATION ET DE L'INFORMATION

TOWARD A NATIONAL SUSTAINABLE DEVELOPMENT STRATEGY FOR CANADA

VERS UNE STRATÉGIE NATIONALE DE DÉVELOPPEMENT DURABLE AU CANADA

THIRD NATIONAL STAKEHOLDERS ASSEMBLY
DECEMBER 16-17, 1993, OTTAWA, CANADA

TROISIÈME ASSEMBLÉE DES INTERVENANTS NATIONAUX
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